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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/031,168	04/26/2002	Duarte Miguel Franca Teixeira Dos Prazeres	Q68133	4986

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SUGHRUE MION, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
SUITE 800
WASHINGTON, DC 20037

EXAMINER	
HANLEY, SUSAN MARIE	
ART UNIT	**PAPER NUMBER**
1651	

DATE MAILED: 01/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/031,168	FRANCA TEIXEIRA DOS PRAZERES ET AL.
	Examiner	Art Unit
	Susan Hanley	1651

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 November 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *8-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *8-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Susan Hanley is now the examiner for this application. Her contact information can be found at the end of this Office action.

Response to Arguments

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 8-18 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Serralheiro et al. (1999), Feliciano et al. (1997) and Nagano et al. (US 5,547,858).

Applicant argues that the instant invention possess properties that are not obvious including the combination of a synthesis reaction with the simultaneous crystallization of the product formed, the use of an ultrafiltration membrane to prevent an enzyme from exiting the system, the coupling of the ultrafiltration module with a hydro-cyclone providing for the simultaneous existence of two outlet stream from the reactor, the removal of secondary products from the system by said outlets which prevents the buildup of secondary products inside the reactor, and the removal of the product in its crystalline form though the hydro-cyclone bottom stream which drives the formation of further product yield increase.

Applicant's arguments filed 11/9/04 have been fully considered but they are not persuasive. Regarding Applicant's assertion that the combination of a synthetic reaction and simultaneous crystallization of the product formed is new and un obvious, Applicant is directed to the title of Serralheiro et al. which states "Continuous production and simultaneous precipitation of a dipeptide in a reversed micellar membrane reactor." This disclosure demonstrates that continuous production and simultaneous precipitation of a dipeptide is obvious over the prior art.

In rebuttal to Applicant's argument regarding the use of an ultrafiltration module, Applicant is directed to p. 508, wehrein Serralheiro et al. teach the use of a Carbosep® ultrafiltration ceramic membrane to retain the α-chymotrypsin (right column, 3rd paragraph).

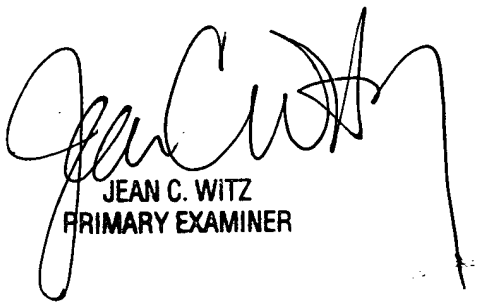
In response to Applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the coupling of the hydro-cyclone with enable the existence of two outlet streams from the reactor and that the removal of secondary products by one of the outlets would prevent secondary product buildup) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Even if the claims did reflect these limitations, said limitations would not make the claimed invention non-obvious because the coupling of a membrane and a hydro-cyclone, which deemed to be obvious over the prior art, would necessarily result in the existence of two outlet streams which would lead to the removal of the permeate stream from the reactor which would naturally prevent the build-up of secondary products.

In response to Applicant's assertion that the coupling of the ultrafiltration module with the hydro-cyclone to remove crystalline product in order to increase product yield is not obvious, the prior art teaches that the optimization of product yield based on thermodynamic principles makes the instant claims obvious. Serralheiro et al. and Feliciano et al. both recognize that the limited solubility of the product favors product formation because the departure of the product from the solution, i.e. precipitation, contributes to shift the equilibrium in favor of the synthesis reaction (p. 508, left column, 3rd paragraph; and p. 285, left column, 1st paragraph, respectively). Nagano et al. teach that the employment of a hydro-cyclone makes an enzymatic reaction more efficient because the crystalline product is entirely removed from the reaction tank (col. 3, lines 19-28). Thus, the physical removal of a crystalline product, as taught by Nagano et al., is simply an obvious extension of the thermodynamics employed by Serralheiro et al. and Feliciano et al. because the removal of a precipitated product from a reaction vessel would

necessarily drive the equilibrium of the reaction to form even more product. Thus, it would have been obvious to the ordinary artisan to employ a hydro-cyclone to the method of Serralheiro et al. because the complete removal of the crystalline product from the reaction vessel, as taught by Nagano et al., is simply an obvious extension of the same thermodynamic principles to enhance product formation of an enzymatic reaction.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.



Any inquiry concerning this communication or earlier communications from the examiner should be directed to Susan Hanley whose telephone number is 571-272-2508. The examiner can normally be reached on M-F 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Wityshyn can be reached on 571-272-0926. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Susan Hanley
Patent Examiner
AU 1651